

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

D4D TECHNOLOGIES, LLC

Plaintiff,

v.

MEDIT CORPORATION

Defendant.

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Civil Action No. 6:21-cv-01176

Jury Trial Demanded

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**ORIGINAL COMPLAINT**

Plaintiff D4D Technologies, LLC files this Original Complaint against Defendant Medit Corporation, in support of which Plaintiff alleges as follows:

**I. NATURE OF THE ACTION**

1. This is an action for patent infringement under 35 U.S.C. § 271 et seq. in which Plaintiff D4D Technologies, LLC seeks damages and other relief, including an injunction prohibiting Defendant Medit Corporation and distributors acting in concert with Medit from importing, selling, and offering to sell the Medit i500 Intraoral Scanner, the Medit i700 Intraoral Scanner, accompanying iScan and Medit Link software, and any private labelled devices that incorporate the same or substantially similar technology so as to infringe, or the use of which will infringe, one or more claims of U.S. Patent Nos. 7,342,668 and 7,978,892.

**II. THE PARTIES**

2. D4D Technologies, LLC, d/b/a E4D Technologies (“D4D”) is a Delaware limited liability company having its principal place of business at 2920 Telecom Parkway, Suite 100, Richardson, TX 75082

3. On information and belief, Defendant Medit Corporation (“Medit”) is a corporation existing under the laws of the Republic of Korea (South Korea) with a principal place of business at 15-27 Anamdong 5-ga, Seongbuk-gu, Seoul, Korea 02842 and/or 23, Goryeodae-ro 22 gil, Seongbuk-gu, Seoul, Korea 02855.

### **III. JURISDICTION AND VENUE**

4. Upon information and belief, Medit has directly or indirectly committed and continues to commit acts of infringement related to importing, selling, offering to sell, and using the Medit i500 Intraoral Scanner (“i500”) and the Medit i700 (“i700”) Intraoral Scanner (collectively the “iSeries”), both of which infringe one or more claims of U.S. Patents owned by D4D as further described below. On information and belief, Medit causes the iSeries to be sold and used in the State of Texas and within this judicial district in violation of D4D’s patent rights. On information and belief, the Court has specific personal jurisdiction over Defendant Medit based on Medit’s actions with respect to the iSeries in the State of Texas, and D4D’s causes of action for infringement arise from Medit’s actions and contacts with the State of Texas.

5. In addition, or in the alternative, this Court has personal jurisdiction over Defendant Medit under Federal Rule of Civil Procedure 4(k)(2).

6. Upon information and belief, Defendant Medit is a foreign corporation not resident in the U.S., making venue proper in any judicial district, including this district, under 28 U.S.C. § 1391(c)(3).

7. The Court has subject matter jurisdiction under at least 28 U.S.C. § 1338.

#### IV. FACTUAL BACKGROUND

8. D4D manufactures and sells intraoral scanner systems for use by dental professionals to scan and create an interactive 3D image of a patient's mouth. These intraoral scanner systems are used with CAD/CAM (computer-aided design/computer-aided manufacturing) technologies to aid in treatment of dental issues and particularly for restorative work (crowns, inlays, onlays, veneers and bridges) or for scanning the full arch for various non-restorative applications like ortho aligners, sleep apnea devices, etc.

9. In the early 2000s, existing intraoral 3D imagining systems used a variation of the Moiré imaging technique in which structured white light projects a two-dimensional depiction on the object to be imaged, such as a tooth. Moiré systems use the 2D lateral information and input from skilled operators to determine relative dimensions of adjacent features. These systems also use a sinusoidal intensity pattern that is observed from a position other than a projection angle of the white light that does not appear sinusoidal to infer a point-by-point phase angle between an observed and projected image to correlate height data.

10. Intraoral imaging using the Moiré technique images a dental item, such as a tooth, directly from above or below the tooth's occlusal surfaces (the end surfaces of the teeth that contact each other when the jaw is closed). These systems have low depth resolution and may not accurately image or represent a surface of the tooth. They also require either multiple images or substantial processing time to create the 3D image. These systems also may require the use of a powder to provide a uniform color and

reflectivity that are required when utilizing white light. The powder layer may have a non-uniform thickness, resulting in errors in the digitized data used to create the 3D image.

11. With a need in the marketplace for improved intraoral scanning technology, D4D employees set out to solve the problems associated with the Moiré and similar systems. Their efforts resulted in the inventions disclosed and claimed in U.S. Patent Nos. 7,342,668 ("the '668 patent") and 7,978,892 ("the '892 patent") (collectively, the "D4D Patents"). A copy of the '668 patent is attached hereto as Exhibit 1. A copy of the '892 patent is attached hereto as Exhibit 2.

12. D4D is the record title holder of each of the D4D Patents, which are valid and enforceable in the U.S.

13. The '668 patent issued on March 11, 2008, and will expire on November 2, 2025. The '668 patent claims a method for digitizing a physical object and dental imaging systems. In summary, the method and systems generally involve projecting a plurality of light patterns on the object/dental item, each pattern including a plurality of distinguishable curvilinear lines, capturing light reflected from the object/dental item, determining x, y, z coordinates or data points on the surface based on the capture of reflected light, and using the coordinates or data points to generate a representation of the object or display a 3D representation of the dental item.

14. The '892 patent issued on July 12, 2011, and will expire on May 11, 2030. The '892 patent claims methods for obtaining a 3D model of an object and an imaging system. In summary, the methods and system generally involve projecting a pattern onto the object, finding a pixel from one image that corresponds to a pixel from another

image of the object as a matched pixel, and using photogrammetry to determine 3D coordinates for each matched pixel to obtain a 3D model.

15. D4D manufactures and sells scanner systems in the U.S. that are covered by one or more claims of the D4D Patents. These scanner systems are commercially available from D4D or third parties under the trademarks: Planscan, Emerald, and Emerald S.

16. D4D has become aware that various distributors in the U.S. were and/or are selling the iSeries manufactured by Medit. On information and belief, Medit has been selling the i500 since 2018, and has been selling the i700 since 2021.

17. After obtaining an i500 and an i700 scanner (and accompanying Medit iScan/Medit Link software) and inspecting their features and use in light of the D4D Patents, D4D determined that they infringe, or their use infringes, one or more claims of the D4D Patents. D4D sent a letter to Medit in or around October 2020 to provide actual notice of the D4D Patents and notice that the i500 infringes one or more claims of the D4D Patents. The letter to Medit offered to discuss potential licensing of the D4D Patents, as D4D thought that such discussions would be more productive from a business perspective than pursing an infringement claim. D4D did not receive a response from Medit.

18. D4D then sent similar letters to Medit's distributors in or around December 2020. These letters were to provide actual notice of the D4D Patents and notice that the i500 infringes one or more claims of the D4D Patents. As with the letter to Medit, the letters to the distributors also offered to discuss potential licensing of the D4D Patents.

D4D received a response from only one distributor, which ultimately did not result in a license.

19. Because D4D's efforts to resolve Medit's infringement through licensing were unsuccessful, D4D now files this Original Complaint asserting claims of patent infringement.

## V. CAUSES OF ACTION

### Count I – Infringement of the ‘668 Patent

20. D4D hereby incorporates by reference the allegations of the previous paragraphs of this Complaint.

21. Attached hereto as Exhibit 3 is an inspection report for the i500 with annotations showing how it or its use corresponds to the elements of the claims of the D4D Patents, as further explained below. Attached hereto as Exhibit 4 is the User Guide accompanying the i500.

22. Subsequent inspection of the i700 revealed that the functional imaging components and methodology of the i700, as related to the claims of the ‘668 patent and the ‘892 patent, are the same as the i500.

23. The ‘668 patent has three independent claims, claims 1, 19, and 20, that are infringed by the iSeries. Medit has infringed and continues to infringe one or more claims of the ‘668 patent, including independent claims 1, 19, and 20, without license or authorization and in violation of 35 U.S.C. § 271(a) and/or (b) by selling and offering to sell the iSeries in the U.S. and by encouraging the sale, offer to sell, use of, and importation of the iSeries in the U.S.

24. The use of the iSeries involves a method for digitizing a physical object as claimed in independent claim 1 of the '668 patent. As required by claim 1, the use of the iSeries involves (a) projecting a plurality of sequential light patterns onto a surface of an object, where each of the plurality of sequential patterns includes a plurality of distinguishable curvilinear lines where a first pattern includes a first number of distinguishable curvilinear lines, and a subsequent pattern includes at least the same number of lines than the first number of distinguishable curvilinear lines ; (b) capturing light reflected from the surface; (c) determining coordinates x, y, z of points on the surface according to the captured light; and (d) using the coordinates to generate a representation of the physical object. All of the steps of claim 1 of the '668 patent are performed by purchasers using the iSeries, either literally or under the doctrine of equivalents, and those steps are performed in accordance with the intended use and as instructed by Medit. See Ex. 3, particularly pp. 4, 24, 35, 46, 47; and Ex. 4, particularly pp. 4, 8, 11.

25. By selling the iSeries and intending purchasers to use the iSeries in a manner that directly infringes the method of claim 1, Medit is actively inducing infringement of claim 1 and is liable as an infringer under 35 U.S.C. § 271(b).

26. The iSeries is a dental imaging system as claimed in independent claim 19 of the '668 patent. As required by claim 19, the iSeries comprises (a) means for projecting a plurality of sequential patterns toward a dental item, each of the plurality of sequential patterns including a plurality of distinguishable curvilinear lines, where a first pattern includes a first number of distinguishable curvilinear lines, and a subsequent pattern includes a second number of distinguishable curvilinear lines, wherein within a pattern each curvilinear line is associated with a region that is non-rectangular and that does not

overlap with a region associated with an adjacent curvilinear line; (b) means for capturing light reflected from a surface of the dental item; (c) means for determining data points associated with characteristics of the surface according to the captured light reflected from the surface; and (d) means for displaying the a three-dimensional representation of the surface of the dental item according to the data points. All of the elements of the system of claim 19 of the '668 patent are included in the iSeries, either literally or under the doctrine of equivalents. See Ex. 3, particularly pp. 35, 24, 41, 46, 47; and Ex. 4, particularly pp. 1, 4, 8, 11.

27. By selling the iSeries to distributors or customers in the U.S., Medit is infringing claim 19 of the '668 patent under 35 U.S.C. § 271(a). In the alternative, if Medit is not selling the iSeries in the U.S., but such sales are only through distributors who import the iSeries into the U.S. from Medit, then Medit is actively inducing infringement by its distributors and is liable as an infringer under 35 U.S.C. § 271(b).

28. The iSeries is a dental digitizing system as claimed in independent claim 20 of the '668 patent. As required by claim 20, the iSeries comprises (a) a projector configured to illuminate a dental object during each of sequence of exposure periods with a light patterns including a plurality of distinguishable curvilinear lines, where a first light pattern includes a first number of distinguishable curvilinear lines, and a subsequent light pattern includes a second number of distinguishable curvilinear lines, wherein within a pattern each curvilinear line is associated with a region that is non-rectangular and that does not overlap with a region associated with an adjacent curvilinear line; (b) a camera configured to capture an image according to light reflected during each exposure period; (c) a controller configured to determine a set of points associated with characteristics of

a surface of the object according to each image, and to compile each of the captured images to form an image of the object; and (d) a display for displaying the image of the object. All of the elements of the system of claim 20 of the '668 patent are included in the iSeries, either literally or under the doctrine of equivalents. See Ex. 3, particularly pp. 8, 19, 23, 26, 35, 47; and Ex. 4, particularly pp. 4, 8, 11.

29. By selling the iSeries to distributors or customers in the U.S., Medit is infringing claim 20 of the '668 patent under 35 U.S.C. § 271(a). In the alternative, if Medit is not selling the iSeries in the U.S., but such sales are only through distributors who import the iSeries into the U.S. from Medit, then Medit is actively inducing infringement by its distributors and is liable as an infringer under 35 U.S.C. § 271(b).

30. Medit has had actual notice of the '668 patent since at least October 2020, when D4D sent a notice letter to Medit. Medit's continued infringement with notice of the '668 patent constitutes willful infringement.

31. D4D has been damaged and continues to suffer irreparable harm and damages as a result of Medit's infringement of the '668 patent, including by way of lost sales of D4D's products covered by the '668 patent.

#### **Count II – Infringement of the '892 Patent**

32. D4D hereby incorporates by reference the allegations of the previous paragraphs of this Complaint.

33. The '892 patent has at least two independent claims, claims 1 and 6, that are infringed by the iSeries. Medit has infringed and continues to infringe one or more claims of the '892 patent, including independent claims 1 and 6, without license or authorization and in violation of 35 U.S.C. § 271(a) and/or (b) by selling and offering to

sell the iSeries in the U.S. and by encouraging the sale, offer to sell, use of, and importation of the iSeries in the U.S.

34. The use of the iSeries involves obtaining a 3D model of an object as claimed in independent claim 1 of the '892 patent. As required by claim 1, the use of the iSeries involves projecting a pattern onto the object from at least first and second positions ; observing the pattern from the first and second positions by capturing an image P of the pattern incident on the object; capturing an illumination image I of the object from each of the first and second positions, wherein the image I is captured using an imaging system comprising a projection portion and one or more imaging portions; forming a 3D model of the object for each of the first and second positions by analyzing observed distortions to the pattern P caused by a 3D surface of the object; using the 3D model in conjunction with each illumination image I to find a pixel in the illumination image I of the object from the first position that corresponds to a pixel in the illumination image I of the object from the second position, wherein the corresponding pixels are a matched pixel; and using photogrammetry to determine 3D coordinates for each matched pixel. All of the steps of claim 1 of the '892 patent are performed by purchasers using the iSeries, either literally or under the doctrine of equivalents, and those steps are performed in accordance with the intended use and as instructed by Medit. See Ex. 3, particularly pp. 41, 45-47; and Ex. 4, particularly pp. 4, 20-22.

35. By selling the iSeries and intending purchasers to use the iSeries in a manner that directly infringes the method of claim 1, Medit is actively inducing infringement of claim 1 of the '892 patent and is liable as an infringer under 35 U.S.C. § 271(b).

36. The use of the iSeries involves obtaining a 3D model of an object as claimed in independent claim 6 of the '892 patent. As required by claim 6, the use of the iSeries involves projecting a pattern onto the object from at least two positions; observing the pattern from those positions by capturing at least two images  $P_1$  and  $P_2$  from slightly different offset locations of the pattern incident on the object; capturing illumination images  $I_1$  and  $I_2$  of the object for each of the at least two positions, wherein the images  $I_1$  and  $I_2$  are captured using an imaging system comprising a projection portion and one or more imaging portions; forming a 3D model of the object for each position by analyzing observed distortions to the pattern  $P$  caused by the 3D surface of the object; using the 3D model in conjunction with each image  $I_1$  and  $I_2$  to find corresponding pixels between image  $I_1$  and  $I_2$ ; and using photogrammetry to determine 3D coordinates for each matched pixel. All of the steps of claim 6 of the '892 patent are performed by purchasers using the iSeries, either literally or under the doctrine of equivalents, and those steps are performed in accordance with the intended use and as instructed by Medit. See Ex. 3, particularly pp. 8, 41, 46-47; and Ex. 4, particularly pp. 4, 21-22.

37. By selling the iSeries and intending purchasers to use the iSeries in a manner that directly infringes the method of claim 6, Medit is actively inducing infringement of claim 6 and is liable as an infringer under 35 U.S.C. § 271(b).

38. Medit has had actual notice of the '892 patent since at least October 2020, when D4D sent a notice letter to Medit. Medit's continued infringement with notice of the '892 patent constitutes willful infringement.

39. D4D has been damaged and continues to be damaged by Medit's infringement of the '892 patent, including by way of lost sales of D4D's products covered by the '892 patent.

## VI. PRAYER

WHEREFORE, premises considered, D4D seeks judgment and relief against Defendant Medit, including that:

- (a) Judgment against Medit be entered on all claims herein;
- (b) Medit be adjudged and decreed to have infringed the D4D Patents under 35 U.S.C. § 271(a) and/or (b) and that such infringement is willful;
- (c) D4D be awarded its damages in an amount not less than a reasonable royalty pursuant to 35 U.S.C. § 284 and that such amount be trebled by the court based on Medit's willful infringement;
- (d) D4D be awarded its costs and pre- and post-judgement interest as permitted by law and pursuant to 35 U.S.C. § 284;
- (e) This case be declared to be an "exceptional case" within the meaning of 35 U.S.C. § 285 and D4D be awarded its reasonable attorneys' fees;
- (f) Entry of a preliminary and permanent injunction against Medit and its officers, agents, servants and employees, and all entities and individuals acting in concert with them, including distributors, prohibiting the importation, sale, offer for sale, and all other infringing activity related to the iSeries and any private labelled devices that incorporate the same or substantially similar technology; and
- (g) Such other and further relief, at law or in equity, to which D4D may be justly entitled.

**VII. JURY DEMAND**

D4D hereby demands a trial by jury on all claims and issues so triable.

November 4th, 2021

Respectfully submitted,



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